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AMERICAN MUSEUM OF NATURAL HISTORY,
NEW YORK, N.Y.

FRANK E. WATSON

ENTOMOLOGICAL NEWS

VOL. XLI. MARCH, 1930 No. 3

North American Institutions Featuring Lepidoptera. XII. American Museum of Natural History, New York, New York.

By J. D. GUNDER, Pasadena, California.

(Plates VII-IX.)

The American Museum of Natural History in New York City has a convenient public location on the west side of Central Park at 77th Street and occupies a rather large, long, five-story, red granite building with some fifteen acres of floor space. Its cornerstone was laid in 1874 by President U. S. Grant and the building was formally opened three years later by the succeeding President of the United States, R. B. Hayes. Though planned and built in the early '70s it is still admirably suited for the purposes of a great museum and fortunately there is sufficient ground area for further development. Recently announced building plans call for a new wing to be known as the South Oceanic Hall and an additional structure in honor of Theodore Roosevelt which will contain an African Hall. These extensions require an expenditure in excess of three million dollars. Perhaps the total cost of the present museum building is more than $12,000,000[1].

The American Museum is governed by a self-perpetuating board of trustees of which Mayor Walker of New York, the City Controller and the President of the New York Park Board are *ex-officio* members. The president of the board of trustees is Dr. Henry Fairfield Osborn, the first vice-president, George F. Baker and the second vice-president, J. Pierpont Morgan.

Aside from being a well-known mecca for scientific research and a storehouse of valuable collections of natural objects, the Museum has of late years shared its educational facilities

[1] In this regard it is interesting to note that the Los Angeles Museum in California is spending nearly $10,000,000 alone for its new unit structure

directly with the New York Public School system. This exceptional and noteworthy activity comes under the head of the School Service Department where hundreds of science lectures are arranged for each year and where thousands of lantern slides are prepared and circulated, in addition to movable exhibits of demonstrative value. The American Museum of Natural History is sometimes popularly spoken of as "the largest school house in United States" and certainly no other scientific institution in this country or in Europe has taken the trouble to directly share and so well develop its educational potentialities.

While the American Museum does not claim to have originated the idea of habitat groups, or the life-like display of creatures amid their natural surroundings, it was the first large museum in this country to adopt this method for public display on an extensive scale and in all departments. Among the many beautifully executed habitat pictures to be seen, perhaps the one which attracts the most curious interest, is that of the famous dinosaur eggs from Mongolia collected by Dr. Andrews on his Third Asiatic Expedition. These eggs are depicted lying scattered in the original desert sand and rock just as they were discovered.

Of interest to entomologists are the insect habitat groups and various displays shown for the most part in the Hall of Insects on the third floor[2]. Here are found graphically arranged the various phases of insect life, their anatomy, their importance in relation to man, their classification, distribution, evolutionary tendencies, etc. It is the most unique display room of its kind and much credit is due Dr. Frank E. Lutz, Curator of the Museum's Department of Entomology and his assistants for its well-planned installation. A rather informal photo[3] of Dr. Lutz is reproduced on plate IX. This picture was taken several summers ago at one of the "Nature Trails" camps established in cooperation with the Museum near Tuxedo, New York. The "Nature Trails" organization was found-

[2] Plate VIII accompanying this article illustrates the original "Butterfly Group" of which many museums have made reproductions.

[3] From an article entitled "Taking Nature Lore to the Public" by Dr. Lutz in the Natural History Magazine, Vol. 26, No. 2.

ed by the Doctor with the thought of giving the youth of New York a chance to study insect biology during their summer's vacation. It is hoped the "Nature Trails" idea will spread to many sections of the country. Dr. Lutz first came to the American Museum as Assistant Curator of Invertebrate Zoology in 1909. He is a good executive and has published many papers in various popular and educational journals. Leaning somewhat to the study of Arachnida, Dr. Lutz is rapidly building up a large museum collection of this class. Some years ago, in a paper on the distribution of West Indian spiders, he compared each genus with its distribution elsewhere as given by Simon. He has also made some taxonomic study of bees. His "Fieldbook of Insects" is well known and is an invaluable work of reference for amateurs wishing a general knowledge of the better known insects of the northeastern United States.

The American Museum has, from its beginning, acquired collections of insects. Baron Osten Sacken, while Russian consul general in New York City from 1862 to 1871, gave the Museum its first series of specimens. These consisted of many Diptera which were the Baron's favorite order; however there were almost a thousand species of various insects in the lot. About the same time Mr. Coleman T. Robinson, who collaborated with the well-known Mr. A. R. Grote, presented his collection of 3000 butterflies and moths. Mr. R. A. Whitthaus also gave some 2000 specimens especially donated as a study collection. Altogether these collections formed the start of the Museum's work in the entomological field. In 1888 Mr. William Beutenmuller was engaged to give his entire time to insects at the Museum and with his appointment as a regular curator, entomological activities went briskly ahead. Exhibition work along educational lines was begun and studies in life history and other phases of insect biology were undertaken. In 1892 the widely known collection of the actor, Mr. Henry Edwards, was purchased by subscription. This collection consists of about 250,000 specimens, mostly butterflies from many sections of the earth, as Mr. Edwards visited many exotic regions during his stage career. The Edwards types are kept separate. Probably Mr. Edwards will be longest remembered because

of his work on the lepidoptera of California and of the Pacific Coast. Of late years the Museum has been gradually increasing the size of its lepidopterous collections, especially adding to the exotics from Central and South America, but no really noteworthy collection containing types from the United States has been added since the Edwards material. All the butterflies and moths are kept in uniform size cabinets as illustrated on plate VII. (An Am. Mus. photograph by Mr. Julius Kirschur). These cabinets are enameled white on the outside and hold about one hundred drawers each. Substantial sliding doors hung from a trolley give ready access. I imagine there are about ten of these cabinets in the two rooms devoted exclusively to the study collections. All types are kept in a single cabinet of stronger construction which is painted a darker color. At this writing no estimate is available as to the total number of lepidoptera in the Museum.

Since 1914 Mr. Frank Watson has been in charge of the collections under the title of Assistant in Lepidoptera. He was born in New York City in 1877 and has always resided there. His Degree of B.S. was received at Cooper Union in 1900. In the past Mr. Watson has described a score or more of American butterfly variations and practically all of his types are in the Museum. He is at present engaged upon a paper concerning West Indian Lepidoptera. Frank is a hard working fellow and busy from morning till night. The problem of taking care of the increasing number of deserving visitors to a great museum is gradually becoming a serious matter. Mr. Watson once told me his department averaged four a day and sometimes ten people wishing to see him or the study collections or the types. These folks, whether professional or semi-amateur, cannot be "hurried off". It all takes time and there seems no ready solution for the question. Tax-free public institutions and their employees must expect to be seen and be known.

The scientific staff of the Division of Zoology and Zoo-geography under which the entomological section is conducted consists of the following: F. M. Chapman, Sc.D., N.A.S., Curator-in-Chief; Frank E. Lutz, Ph.D., Curator (of Insect Life);

THE BUTTERFLY GROUP

This habitat group contains over 1200 specimens of the one species, the Monarch Butterfly (*Danaus menippe* Hbn.). They are shown in a natural cluster, temporarily at rest, during an accumulative migration. Am. Mus. photo.

Frank E. Lutz

A. J. Mutchler, Associate Curator of Coleoptera, C. H. Curran, M.A., Assistant Curator; Frank E. Watson, B.S., Assistant in Lepidoptera; Wm. M. Wheeler, Ph.D., Research Associate in Social Insects; Chas. W. Leng, B.S., Research Associate in Coleoptera; H. F. Schwarz, A.M., Research Associate in Hymenoptera.

The first Entomological Club in New York City was founded by Neumoegen, Grote, Graef, Koebele and Henry Edwards in 1880[4]. Their meetings were held in the different private homes and the publication *Papilio* was published for four years in four volumes. *Papilio* was devoted exclusively to articles upon lepidoptera and it is still an asset to any library. For various reasons this original Club gradually ceased to exist and it was not until June 29, 1892, that the New York Entomological Society was organized, to become an incorporate society a year later. Through the foresight and fortunately early intercession of Mrs. Annie T. Slosson with the late President Morris K. Jessup, the Society established headquarters at the Museum and has been meeting there bi-monthly ever since.

The organ of the Society, the *Journal of the New York Entomological Society,* is now in its 38th volume. A recent bequest of ten thousand dollars towards publication by the late L. B. Woodruff assures its future. The issue of September, 1929, is of unusual interest because of the publication of the numerous intimate and entertaining letters of Dr. A. E. Schwarz, the well-known coleopterist. Every entomologist should read these letters. They were compiled and edited under the direction of John D. Sherman, Jr.

Collecting Male Polyphemus Moths (Lep.: Saturniidae). On the night of July 10th, 1929, my coworker and I spent the entire night collecting the male polyphemus moths, which were lured to their death by two caged specimens of the opposite sex. We had to our credit next day just eighty-two specimens. The moths began appearing at about 10:30 and continued until four in the morning—when dawn began to break. —Mrs. Elmer Grubb, Fredericktown, Ohio.

[4] See article by G. P. Englehart in Ann. Ent. Soc. of Am., XXII, 3, 1929.

New Species of Dolichopodidae from North America (Diptera).

By MILLARD C. VAN DUZEE, 12 Abbotsford Place, Buffalo, New York.

(Continued from page 55)

Neurigona nigrimanus new species.

♂ : Length 5 mm. Face linear, silvery white; palpi yellow; front wholly covered with white pollen; occiput black with white pollen; antennae small, arista brown; orbital cilia white.

Thorax black with white pollen, which almost conceals the ground color on the depressed space before the scutellum, the edge around this space is yellow on the sides; most of the humeri, a stripe on each side extending from the humeri to the scutellum and posterior edge of pleurae yellow; abdomen yellow, second, third and fourth segments largely black, but this black narrowed on the sides posteriorly. Hypopygium black, somewhat square in outline, with small, mostly yellowish appendages at tip.

Coxae, femora and tibiae yellow; anterior coxae with yellow bristles at tip; first joint of fore tarsi dark brown, becoming black at tip, remaining four joints deep black, fifth joint very slightly thickened; middle tarsi brown, becoming black; hind tarsi with first joint yellow, remaining joints black; joints of fore tarsi as 87-45-23-10-11; of middle ones as 142-40-25-15-10; joints of hind tarsi as 66-63-37-19-15. Calypters, their cilia and the halteres pale yellow.

Wings grayish, slightly tinged with brown along the costa; third vein bent back at tip; last section of fifth vein bent near its middle, ending near tip of third and before the apex of the wing; last section of fifth vein three times as long as cross-vein; sixth vein long, nearly parallel with the wing margin, but bent a little to reach the margin; wing much narrowed at base.

♀ : Face wider than in the male; thorax black with humeri, a spot at root of wings, scutellum and posterior edge of pleurae yellow; abdomen yellow, base of second, third and fourth segments black, black on second narrowed in the middle of the dorsum; all tarsi yellow or brownish yellow with last joint black; wings with tips of third and fourth vein far apart, fourth ending almost in the apex of wing; anal angle more prominent and sixth vein shorter than in the male.

Described from one pair, taken by Owen Bryant, July 4, 1925, at Banff, Alberta. *Type* in the U. S. National Museum. No. 20581.

Dolichopus breviciliatus new species.

♂ : Length 5.5 mm. Face wide, sordid gray; palpi velvety black; front metallic bronze, dulled with gray pollen; antennae wholly black, short, third joint scarcely as long as wide, obtuse at tip; orbital cilia wholly black.

Thorax and abdomen dark green with slight bronze reflections, abdomen with black hair; hypopygium rather large, its lamellae black, a little brownish in the middle, nearly twice as long as wide, jagged and bristly on apical margin (shaped about as in figure 175a, Plate 12, Bulletin 116, U. S. National Museum).

All coxae, femora, tibiae and tarsi black with black hair and bristles; middle tibiae in the type with one bristle below; middle and hind femora each with one bristle near the tip, the latter ciliated with brown hairs, which are not as long as the width of femora; middle basitarsi with two large bristles above near the tip, otherwise the tarsi are plain; joints of fore tarsi as 56-26-16-14-14; of middle ones as 86-34-28-18-18; first three joints of hind tarsi as 111-60-42. Calypters and halteres yellow, the former with black cilia.

Wings dark grayish, tinged with brown in front; third vein straight; last section of fourth vein bent near basal third, parallel with third for some distance before its tip, ending considerably before the apex of the wing; crossvein and last section of fifth vein of nearly equal length; hind margin of wing not notched at tip of fifth vein, wing of nearly equal width; anal angle prominent.

Described from one male, taken by Owen Bryant, August 29, 1925, at Laggan, Alberta, on Paradise Mt., at an elevation of 6,700 feet. *Type* in the U. S. National Museum. No. 20582.

Polymedon flavitibialis new species.

♂ : Length 5.5 mm. Face wide, silvery white, reaching about its own width below the eyes; front green with a little white pollen; antennae black, all joints more or less yellow below, first joint long, third joint a little longer than wide, rounded at tip; arista with short pubescence; lateral and inferior orbital cilia white.

Thorax and abdomen green, dulled with white pollen; bristles of thorax inserted in indistinct brown dots; acrostichal bristles in two rows, extending nearly the whole length of thorax and becoming longer posteriorly; pleurae and coxae more black, white pollinose; there is a large, somewhat triangular white pollinose spot at suture and a small, silvery white, round spot

at outer posterior corners of dorsum; hairs of abdomen black; hypopygium (Fig. 1) black, large; outer lamellae large, black, very slightly yellowish at base, thickly covered with white pollen, upper surface with fine white hairs, below with long, blunt, blackish bristles, inner appendages partly reddish yellow, with a black hook at tip.

Fig. 1.

Anterior surface of fore coxae with small black hairs and black bristles at tip; all femora greenish black, thickly covered with white pollen; extreme tips of all coxae, tips of all femora, most of trochanters and all tibiae yellow or yellowish; all tibiae with large bristles above, their extreme tips brown or black, the black most conspicuous on fore pair; fore tibiae with one, middle ones without a bristle below; all tarsi yellow at base; hind tarsi blackened from tip of first joint, fore and middle ones from tip of second joint and with tip of first black; fore tarsi very slightly compressed and widened from tip of first joint, their pulvilli rather large, white; middle tarsi with the usual bend between second and third joints, second joint distinctly hollowed out just before its tip, on under side, third joint straight; hind tarsi with a large bristle below near base; joints of fore tarsi as 49-14-12-8-12; of middle ones as 70-25-26-16-12; those of hind pair as 57-55-34-19-18. Calypters yellow with black tips and very long, yellow cilia; halteres yellow.

Wings grayish, crossvein, fifth vein and last section of fourth vein distinctly but narrowly bordered with brown; third vein bent back a little at tip, last section of fourth vein bent about as in the genus *Paraclius*, the part from the crossvein to bend about two-thirds as long as last part, its tip near tip of third and before apex of wing; last section of fifth vein does not reach the margin of wing, which is notched where the tip should be; crossvein as 37, from crossvein to wing margin at notch as 39; anal angle of wing prominent; sixth vein long but not reaching wing margin.

Described from one male, taken by F. H. Snow, August, 1902, in Southern Arizona. *Type* in the University of Arkansas.

Paraclius elongatus new species.

♂ : Length 2.5 mm. Face narrowed below, silvery white, but the ground green color showing through on upper part;

front shining blue; palpi black; antennae rather large, black, third joint a little longer than wide, pointed at tip, arista with long pubescence; lower orbital cilia yellow.

Thorax green with blue reflections, shining, without a spot of white pollen at the suture; pleurae with white pollen. Abdomen green with broad metallic blackish bands at the incisures, its hairs black; hypopygium brown, a little reddish, rather long, but not thick, its lamellae oval, about twice as long as wide, yellow with a black border and short hairs all around the edge; there is a pair of rather long, bare, curved, horn-like, yellow inner appendages.

Fore coxae almost wholly yellow with black hair on anterior surface and bristles at tip; hind coxae yellow, a little blackened at base, middle ones largely black; all femora and tibiae yellow, posterior femora a little blackened at tip, especially on posterior surface; middle tibiae with two bristles below, one at middle, the other a little nearer the base, these bristles are quite close together, bristles on upper surface large; fore tarsi yellow, darker at tip, middle tarsi black from tip of first joint, hind ones wholly black; joints of middle tarsi as 32-18-15-11-8; first two joints of hind tarsi as 27-15. Calypters and halteres yellow, former with black cilia.

Wings grayish, a little tinged wtih brown in front of second vein; third vein nearly straight; last section of fourth vein quite abruptly bent, this bend broadly rounded and beginning at middle of the section, portion beyond the bend considerably concave posteriorly, its tip close to tip of third vein and far in front of apex of wing; last section of fifth vein only a little curved beyond the crossvein, it is 19; crossvein 11-fiftieths of a millimeter long.

♀ : Almost like the male, except that the face is wide with its sides nearly parallel and the bend in last section of fourth vein not as much rounded.

Described from one pair, taken by H. H. Smith, May, 1906, at St. Vincent, West Indies. *Types* in the collection of the University of Arkansas.

This comes nearest *arcuatus* Loew, but in that species the fore and middle femora are brownish on upper edge, hind femora dark brown on most of apical half, middle and hind coxae black almost to the tip, and bend in last section of fourth vein is almost a right angle.

Insects Screened from Bean Samples (Hemip., Coleop., Orth., Hym., Dip.).

By A. O. Larson and C. K. Fisher,
Division of Stored-Product Insects, U. S. Bureau of Entomology.

While inspecting samples of newly harvested beans in California for evidence of bean weevil infestations the writers observed that large numbers of insects of many species were among the beans. Such insects had probably sought food or shelter in the piles of bean vines in the field and had gone through the threshing machines, in which many of them had been killed. Observation has shown that some insects pass out of the bean threshing machines with the straw while others pass into the sacks with the beans. The latter are taken to the warehouses where they are separated from the beans and are sacked up with the screenings.

The numbers of insects varied in different samples from the same locality and the number of species varied as between different localities and different years. During past years Fuller's rose beetle, *Pantomorus fulleri* Horn, was frequently found in large numbers in samples of beans grown in the Chino district of San Bernardino County, but not a single specimen was found amongst the beans inspected in 1928. In 1927, *Dinocleus pilosus* Lec. was found in great numbers, sometimes eight or ten being in one sample, but in 1928 very few specimens were taken from beans grown in the same vicinity.

Of the Coleoptera, one or another of the lady beetles has been the most numerous each year, while *Chlorochroa sayi* Stål has been the most numerous of the Hemiptera.

By the time the samples reach the laboratory a good number of the insects are dead and too badly broken for identification. Especially is this true of the orders other than Coleoptera and Hemiptera.

During 1928 an effort was made to collect all living insects screened from 3,246 samples collected from Merced, Stanislaus, and San Joaquin Counties in California. Some of these insects were sent to Washington, D. C., where they were kindly determined by the specialists named below.

W. L. McAtee determined the following nine genera and nine species of Hemiptera: *Brochymena 4-pustulata* Fabr., *Chlorochroa sayi* Stål, *Euschistus conspersus* Uhl., *Neottiglossa cavifrons* Stål, *Thyanta custator* Fabr., *Murgantia histrionica* Hahn, *Corizus identatus* Hambl., *Lygaeus reclivatus* Say, var., and *Euryophthalmus cinctus* H. S.

E. A. Chapin determined the following 14 genera and 15 species of Coleoptera: *Necrophorus* sp., *Silpha ramosa* Say, *Aeolus livens* Lec., *Cardiophorus* sp., nr. *tumidicollis* Lec., *Hippodamia convergens* Guér., *H. ambigua* Lec., *Coccinella californica* Mann., *Melanastus* sp., *Coniontis elongata* Csy., *Blapstinus pulverulentus* Mann., *Amphidora littoralis* Esch., *Lema nigrovittata* Guér., *Diabrotica soror* Lec., *Disonycha maritima* Mann., and *Sitophilus oryzae* L.

L. L. Buchanan determined the following six genera and four species of Coleoptera: *Curtonotus* sp., nr. *jacobinus* Lec., *Amara* sp., *Calathus quadricollis* Lec., *Agonum maculicolle* Dej., *Dinocleus pilosus* Lec., and *Cleonus* sp.

Of the Orthoptera a nymph of *Gryllus assimilis* Fabr. was determined by A. N. Caudell.

Of the Hymenoptera *Cryptus tejonensis* Cress. was determined by R. A. Cushman, and a broken ant was determined as *Camponotus* sp. by W. M. Mann.

C. T. Greene determined one dipteron as *Hermetia illucens* L.

Numerous broken specimens of Orthoptera, Hymenoptera, Diptera, and Lepidoptera, as well as a few broken specimens of Odonata, were sifted out of the beans and discarded.

In addition to the foregoing insects many specimens of the following four genera and five species of Coleoptera were collected: *Tenebroides mauritanicus* L., *Oryzaephilus surinamensis* L., *Tribolium ferrugineum* Fab., *T. confusum* Duv., *Trigonogenius globulum* Sol., and *Sitophilus oryzae* L. These had probably crawled in amongst the beans after the latter had reached the warehouses, as these insects are commonly found breeding in some of the sixteen warehouses from which the samples were taken.

Besides the discarded broken insects, which outnumbered

the others, there were collected 37 genera and 39 species in five orders. A pound would have been a very conservative estimate of the weight of the insects screened out.

The bean crop of the United States for the last five years, 1924 to 1928 inclusive, has averaged more than 17 million bushels or more than 1,023,000,000 pounds. The samples from which the above insects were screened weighed about 6,000 pounds. From these figures it appears that more than 85 tons of insects are carried into the warehouses with the newly harvested beans each fall. These insects are sacked up with the bean screenings and die, thereby reducing the numbers of both beneficial and injurious insects which would otherwise go into hibernation in or near the bean fields.

Descriptions of New Genera and Species of the Dipterous Family Ephydridae. Paper VIII.[1]

By Ezra T. Cresson, Jr.

Ditrichophora painteri new species.

This species is unique in having the wings spotted somewhat similar to the species of the genus *Hyalhea*. In the narrow parafacialia and cheeks, the relatively short second vein, curving abruptly into the costa, the species falls near *Ditrichophora nadineae* Cresson, from California.

Black; antennae except upper part of third segment, knees, apex of tibiae, and all tarsi, yellow. Halteres white. Wings clear with the following fuscous design: a narrow transverse spot at tip of first vein, including anterior crossvein, a large quadrate spot at costa midway between first and second veins, a similar spot including tip of second vein, another such spot between tips of second and third veins, a small spot including tip of third, an irregular diluted spot including posterior crossvein, and an irregular diluted design beyond the latter.

Subopaque, somewhat golden brown above, more whitish below; abdomen shining, somewhat opaque basally. Frons opaque with a broad suborbital line dilating anteriorly, and a preocellar triangular spot, black; otherwise the frons is brownish. Face

[1] Paper VI. See Ent. News, XXXV, p. 159 (1924).
Paper VII. See Ent. News, XXXVI, p. 165 (1925).

sparingly white pruinose; the linear orbits white; mesonotum with four series of well separated roundish, brown spots; scutellum with a pair of brown apical spots.

Frons quadrate; orbits parallel. Face scarcely one-third width of vertex, strongly broadening below, in profile, convex, concentric with eye-outline; parafacialia and cheeks linear; arista with five hairs. Abdomen broad with revolute lateral margins; fifth abdominal segment, in the male, subglobose with rounded apex. Fore femora of male with about three minute postflexor spinules. Wings slightly pointed at third vein; first and second costal sections subequal in length; second vein abruptly curving into costa. Length, 1.5 mm.

Type.—♂ ; Puerto Castilla, HONDURAS, May 6, 1926, (R. H. Painter; taken at Balsamo Farm, about 110 kilometers along the Truxillo Railroad from Puerto Castilla), [A. N. S. P., no. 6366]. *Paratypes.*—2 ♂ , 1 ♀ ; topotypical.

Ditrichophora balsamae new species.

This species, represented by one specimen, the type, differs from *Ditrichophora painteri* by the seven stripes on the mesonotum. I can find no other differentiating characters; but the specimen is not as fully developed nor in as good a condition as is possible. However the vittate mesonotum is very characteristic and it is thus at once distinguished from *painteri,* with which it apparently agrees in all other respects. Further description is unnecessary.

Type.—♀ ; Puerto Castilla, HONDURAS, May 6, 1926, (R. H. Painter; taken at Balsamo Farm, along the Truxillo Railroad from Puerto Castilla), [A. N. S. P., no. 6365].

Polytrichophora boriqueni new species.

This species is more shining than is usual; the face is scarcely gray dusted, while the orbits are very white and distinct. Suggesting *Discocerina pulchra* Cress., described from Costa Rica, in many respects, but the face is not so narrow nor so distinctly marked.

Black; antennae including second segment but not apex of third, palpi, coxae, tibiae except dark median ring, and tarsi, yellow. Halteres white. Wings hyaline; veins pale. Mesonotum, scutellum, and abdomen shining; pleura slightly grayish. Frons rather opaque, brownish; face medianly grayish, orbits narrowly white.

Structurally similar to *pulchra*. Frons quadrate; face twice as long as broad; parafacialia very narrow, not dilating below, setulae inconspicuous. Cheeks not broader than parafacialia. Arista with four to five hairs. Mesonotal setulae nonseriated. Postflexor comb of fore femora not well developed as distinct spines. Second section of costa not much longer than third. Length, 1.7 mm.

Type.—♂ ? Adjuntas, PORTO RICO, June 26, 1915, [New York Acad. Sci.]. *Paratype.*—1 ♂ ? Mayaguez, PORTO RICO, February 15, 1915, [N. Y. Ac. Sc.].

Hecamedoides buccata new species.

A robust, unformly cinereous species with very broad cheeks; frontal orbital setulae wanting; parafacialia with distinct series of setulae; tibial spur minute. Wings noticeably lactaceous. Although lacking many of the characters typical of *Hecamedoides*, the present species is more closely allied to *Hecamedoides glaucella* (Stenh.) than to the species of *Discocerina*.

Black; frons below, face above, antennae, palpi, knees, bases and apices of tibiae, and all tarsi except apices, tawny to yellow. Halteres white. Wings lactaceous with veins, except costa and posterior crossvein, yellow. Opaque, cinereous; mesonotum somewhat yellowish tinged medianly. Abdomen less densely coated. Femora and tibiae cinereous.

Cheeks nearly as broad as eye-height. Fore femoral comb of about four small spines; hind tibial spur minute, scarcely spur-like. Length, 2.5 mm.

Type.—♂ ; Wildwood, NEW JERSEY, July 18, 1908, (Cresson), [A. N. S. P., no. 6367]. *Paratypes.*—3 ♂, 2 ♀ ; topotypical.

Allotrichoma salubris new species.

Similar to *A. abdominalis* (Will.) but distinguished by the uniformly silvery pleura. The type is probably one of the specimens Dr. Williston had before him when he commented upon *Allotrichoma abdominalis*, in his "Diptera Brasiliana", Part 4, but it is entirely distinct from those before me which agree with the original description of *abdominalis*.

Opaque. Frons, facial carina above, mesonotum, scutellum, first two abdominal segments, dark brown to yellowish brown;

antennae, palpi and tarsi, black; remaining surfaces, including femora and tibiae, bluish gray. Wings lactaceous, or slightly darkened; immaculate, with yellowish veins.

Basal half of antennal arista bare and thickened, the three hairs confined to apical half. Fourth abdominal segment as long as the first three together, triangular and pointed apically. Second vein long and straight; second costal section four or five times as long as third. Otherwise similar to *abdominalis*. Length, 1.5-1.75 mm.

Type.— ♂ ; BRAZIL, (H. H. Smith), [A. N. S. P., no. 6368].

A series of 84 specimens from Chaco, Paraguay, (Fiebrig), [Vienna National Museum] is before me which appear to be this species, but I do not care to consider them paratypic.

Axysta bradleyi new species.

Black; third antennal segment below, tip of palpi, extreme base of tarsi, yellow. Arista white and white pilose. Halteres dark. Wings hyaline, with dark veins. Shining to polished; sparingly brown pollinose; abdomen scabrous. Face grayish medianly, leaving the narrow orbits, which abruptly dilate near cheeks, shining.

Frons convex, horizontal, without distinct frontal bristles. Facial tubercle not prominent; facial profile vertical, twice as long as broad. Cheeks about one-fourth eye-height in width. Third antennal segment about twice as long as broad, conically pointed; upper margin concaved. Scutellum rather flattened, rugulose, slightly elongated. Length, 1.7 mm.

Type.— ♂ ; Waycross, GEORGIA, May 8, 1911, [Cornell University Collection]. *Paratype*.—1 ♂ ; Muncie, ILLINOIS, June 8, 1917, [Illinois Nat. Hist. Survey].

Nostima quinquenotata new species.

This pretty species is allied to *Philygria picta* (Fallen), differing in having five round, whitish spots on an infuscated wing: One in basal portion and one at middle of submarginal cell, one in apical portion of first posterior cell, one at middle of second posterior cell, and one in third posterior cell below posterior crossvein. The crossveins are far removed towards base of wings. The mesonotum is brown with lateral whitish stripes, similar to those of *picta*, but the scutellum is not velvety black. The type may be somewhat teneral, as it is very pale with all but the dorsal surfaces pale yellow. Length, 1 mm.

Type.— ♀ ; Lloyds, Dorchester County, MARYLAND, July 10, 1907, (H. S. Barber), [U. S. N. M., no. 21851].

Nostima niveivenosa new species.

A distinct species similar to *N. immaculata* Cresson described from Costa Rica, but the cross veins are conspicuously white.

Mesontum grayish with three to five brown stripes; abdomen shining, almost polished; a large dorsal triangle broadest at apical margin of second segment, spot at apical angles of third, ventral lobes and a pair of small round dots medianly near apical margin of fourth, and apical margin of fifth segments, whitish or silvery. Wings immaculate with crossveins white within whitish halos. Face prominent below but not abruptly so.

Type.— ♀ ; Aguadilla, PORTO RICO, January, 1899, (A. Busck), [U. S. N. M., no. 21856].

The type has the antennae missing and the body somewhat greasy.

Hydrina nigrescens new species.

Very similar to *Philygria debilis* Loew, but more blackish, not so brownish; frons much longer, about six-tenths as long as broad; cheeks broader; abdomen mostly shining; at most the second costal section one and one-half as long as third. Length, 1.75 mm.

Type.— ♂ ; London Hill Mine, Bear Lake, BRITISH COLUMBIA, July 21, 1903, (R. P. Currie; 7000 feet alt.), [U. S. N. M., no. 21849].

The genus *Hydrina* Robineau-Desvoidy, as here used, is synonymous with *Philygria* Stenhammer, and is retained in the same sense as recognized by Haliday, Loew and Becker.

Hyadina macquarti new species.

This species comes nearer to agreeing with the description of *Ephydra nitida* Macq. than to any specimen I have seen. It differs from *Ephydra rufipes* Meigen, which I have seen, in having the legs dark, with the apices of the femora and the extremities of the tibiae only, paler in some specimens. It differs from *Hydrina binotata* Cress, in having no whitish areas or spots on the wings; and from *Hyadina guttata* (Fallen), in the absence of the velvety-black pleural spot.

Type.— ♂ ; Skagway, ALASKA, June 4, 1921, (J. M. Ald-

rich), [U. S. N. M., no. 21852]. *Paratypes.*—1 ♂, 2 ♀; topotypical. 2 ♂; Anchorage, ALASKA, June 15 and 19, 1921, (J. M. Aldrich), [U. S. N. M.].

Napaea halteralis new species.

This species is distinguished from *Parydra appendiculata* Lw. by the black halteres and tarsi, and white pollinose face. The females, which appear to be conspecific with the male type, have the halteres paler but tips of the knobs are black. This species is probably confined to the Pacific costal areas of North America.

Black including halteres and tarsi. Wings brownish tinged, with tips of second to fourth veins, and crossveins clouded; whitish areas not very pronounced. Subopaque, yellow-brown pollinose, becoming white on face and cheeks, grayish on pectus and legs. No trace of grayish marks on mesonotum. Abdomen more shining, bluish.

Structurally similar to *appendiculata*. Length, 2 mm.

Type.— ♂; Pullman, WASHINGTON, October 17, 1915, (A. L. Melander), [A. N. S. P., no. 6369].

Two topotypical females collected May 12 and June 15, I consider to be paratypic with the type, but they average larger, more shining; face whitish in the antennal foveae and along the orbits; mesonotum with faint grayish acrostical stripe; halteres knobs blackish but not decidedly so intense as in the type; wings more mottled with brown.

Parydra incommoda new species.

Similar to *P. bituberculata* but more shining; the pollinose vesture darker, ranging from dark brown to yellow-brown on the head and thorax. Very little grayish pollen, even below where it is generally pale yellowish and on the abdomen where it is decidedly tinged with brown.

Eyes distinctly horizontal. Frons strongly sculptured, and generally with a distinct longitudinal or roundish depression below ocellar tubercle. Face broader than long, about three-fourths as broad as vertex. Cheeks broader than eye-height. Scutellum quadrate, with lateral margins convex, rounding into the apex; the lateral bristled tubercle rather distinct. Wings with second costal section four times as long as third.

Type.— ♂; Moscow Mountain, IDAHO, June 12, 1910, (A. L. Melander), [A. N. S. P., no. 6370]. *Paratypes.*—3 ♂, 5 ♀; topotypical.

Notes on Coleoptera—No. 2.

By J. N. KNULL, Pennsylvania Bureau of Plant Industry.

The following are miscellaneous rearing records and observations made by the writer unless otherwise stated. Practically all of the rearing was done indoors and for that reason the dates of emergence are not given. Clark's Valley is located in the Blue Mountains north of Harrisburg, Pennsylvania, and runs east and west. The nearest postoffice is Dauphin.

CLERIDAE.

TILLUS TRANSVERSALIS Charp. The writer has a specimen of this species in his collection which was taken in New York City by Mr. George Moetz. Evidently the larva or adult was imported with a shipment of goods.

THANASIMUS TRIFASCIATUS Say. Larvae of this species were taken in numbers from the outer bark of large dead and dying white pines (*Pinus strobus*) in Clark's Valley on November 6th. All of the larvae collected had constructed ovoid pupal cells in the thick outer bark which was about 1½ inches thick. These cells which were nearly at right angles to the grain of the wood were lined with a light colored substance which resembled silk. Some of the cells were four feet from the ground while others were found six inches from the bases of the trees. The larvae were caged in the warm laboratory and the adults emerged early in the spring. These larvae did not seem to respond to warm indoor conditions as many other Coleoptera do and some of them remained in their pupal cells until the following spring. It is quite evident that the larvae pass the winter in the pupal cells and that most of the adults emerge in June and July, as shown by collection records.

The main food of these larvae consisted of *Tetropium velutinum* Lec. although the trees were also infested with *Acanthoderes obsoletus* Oliv., *Gnathotrichus materiatus* Fitch, *Orthotomicus caelatus* Eich., *Hylurgops pinifex* Fitch, *Dryocoetes americanus* Hopk., and *Dendroctonus valens* Lec.

HYDNOCERA VERTICALIS Say. Adults were reared from dead linden (*Tilia americana*) branches infested with *Eupogonius pubescens* Lec. and *Grammoptera exigua* Newn. larvae, also from dead black oak branches (*Quercus velutina*) infested with larvae

of *Agrilus geminatus* Say. The material was collected in Clark's Valley.

ORTHOPLEURA DAMICORNIS Fab. Reared from white oak (*Quercus alba*) infested with *Phymatodes aereus* Newn. collected in Clark's Valley.

ELATERIDAE.

LUDIUS SULCICOLLIS Say. Adults were reared from dead sour gum (*Nyssa sylvatica*) wood infested with *Leptura emarginata* Fab. and *Charisalia americana* Hald. collected at Hummelstown, Pennsylvania.

BUPRESTIDAE.

DICERCA LURIDA Fab. Was reared from a dead branch of a living linden (*Tilia americana*) collected in Clark's Valley.

XENORHIPIS BRENDELI Lec. This insect seems to be so rare that a capture is worthy of record. An adult male was collected on a dead black oak branch in Clark's Valley on July 21.

CHRYSOBOTHRIS CHRYSOELA Illig. A living adult was chopped from a dead branch of persimmon (*Diospyros virginiana*) collected at Wallaceton, Virginia, on October 3.

C. ORONO Frost. Through the kindness of Mr. Frank Haimbach and Mr. J. A. G. Rehn, the writer had a chance to work over three specimens of this species in the Horn collection in the Pennsylvania Academy of Natural Sciences. The material is labeled as follows, one male and female from North Carolina and another female from Virginia. The writer also possesses a large female labeled Fresno Co., Tennessee, June 11. Mr. C. A. Frost kindly sent me the type for comparison and in all of the southern specimens the chitinized areas of the dorsal surface were more pronounced and they lacked the grayish-green color of the punctured areas which is quite marked in the type and allotype.

C. SEXSIGNATA Say. Reared from dead post oak (*Quercus stellata*) branches collected in Clark's Valley.

EUPRISTOCERUS COGITANS Web. One adult was reared from dead river birch (*Betula nigra*) collected in Clark's Valley. This is an unusual record as this insect normally breeds in alder.

AGRILUS DEFECTUS Lec. Reared from dead post oak (*Quercus stellata*) branches collected in Clark's Valley.

A. ARCUATUS Say. Adults which resemble subspecies *fulgens* Lec. were reared from dead shadbush (*Amelanchier canadensis*) collected in Clark's Valley, the tree having been girdled by a beaver. The material was reared from the main trunk which was about three inches in diameter. The larvae had worked beneath the bark and pupated in the sapwood, which is quite unlike the typical girdling of this species.

A. OTIOSUS Say. Reared from small dead branches of black walnut (*Juglans nigra*) collected in Clark's Valley.

A. GEMINATUS Say. Adults were reared from the small dead branches of black oak (*Quercus velutina*) collected in Clark's Valley.

A. BETULAE Fisher. A large series of this species was reared from dead river birch (*Betula nigra*) collected in Clark's Valley. A considerable variation in size and color was observed, the length ranging from 5 mm. to 11 mm., and many of the specimens were bright cupreous throughout the dorsal surface.

CUCUJIDAE.

CATOGENUS RUFUS Fab. During the latter part of April a Cerambycid pupa was taken from a pupal cell in a dead pitch pine (*Pinus rigida*) tree at Hummelstown, Pennsylvania. This pupa was placed in a glass vial and in a couple of weeks a larva of *Catogenus rufus* Fab. emerged. The larva proceeded to devour the dead Cerambycid pupa and in the course of a week the entire pupa was consumed. The *Catogenus* larva pupated in the vial and later the perfect adult emerged. The fact that this species is an internal parasite might account for the great variation in the size of the adults.

ALLECULIDAE.

MYCETOCHARES BINOTATUS Say. Numerous adults reared from the dead wood of a living sour gum (*Nyssa sylvatica*) tree collected at Hummelstown, Pennsylvania.

MELANDRYIDAE.

SYNCHROA PUNCTATA Newn. Reared from dead poison ivy (*Rhus toxicodendron*) stems collected at Harrisburg, Pennsylvania, and from dead ironwood (*Ostrya virginiana*) taken at Laporte, Pennsylvania.

PROTHALPIA UNDATA Lec. This species was recorded erroneously as (*Mystaxus simulator* Newn.) in the *Canadian Entomologist** as breeding in *Viburnum dentatum* and ninebark (*Opulaster opulifolius*). The species was determined as *Prothalpia undata* Lec. by Mr. Ralph Hopping. The two species resemble each other superficially.

SCARABAEIDAE.

OCHROSIDIA VILLOSA Burm. This species was found breeding in a large lawn about two acres in extent near Middletown, Pennsylvania. The larvae had eaten the roots of the grass and in this way killed the plants. The blades of the grass had turned brown and could be raked up in large quantities.

CERAMBYCIDAE.

HYPERMALLUS VILLOSUS Fab. Reared from dead yellow wood (*Cladrastis lutea*) branch collected at Philadelphia, Pennsylvania, by Mr. Floyd Smith and from a dead linden (*Tilia americana*) branch collected in Clark's Valley by the writer.

ELAPHIDION *mucronatum* Say. Reared from dead sweet fern (*Myrica asplenifolia*) stem collected in Clark's Valley.

GRAMMOPTERA EXIGUA Newn. Adults were reared from dead linden (*Tilia americana*) branches collected in Clark's Valley. The larvae did not enter the sapwood but worked between the bark and wood as stated by Craighead.†

CHARISALIA AMERICANA Hald. This species was found breeding in the dead decayed wood on the inside of a hollow sour gum (*Nyssa sylvatica*) at Hummelstown, Pennsylvania, by Mr. H. B. Kirk and the writer.

LEPTURA ABDOMINALIS Hald. The males of this species are usually black, but a male was reared from dead cypress (*Taxodium distichum*) collected at Cape Henry, Virginia, which had legs, head, thorax, scutellum, suture of elytra, humeral angles and an oblique band across apices of elytra black; the rest of the elytra was testaceous including a very small spot on the vertex of head. A female was reared which had the usual bicolored legs in this sex, two very small black spots on pronotum, the rest of both dorsal and ventral surfaces was testaceous.

*A. B. Champlain and J. N. Knull, Can. Ent. V. 57, p. 114; 1925.
† F. C. Craighead—Dom. Can. Agl. Bul. 27, p. 96; 1923.

The species had a high percentage of parasitism by a species of Bethylid determined by Mr. Rohwer as *Sclerodermus macrogaster* Ashm. The adults are wingless and follow the burrows of the larvae.

(To be continued)

Cleveland Museum Entomological Expedition.

Dr. George P. Englehardt, Director of Natural Sciences in the Brooklyn Museum, and Mr. John C. Pallister, Entomologist of the Cleveland Museum of Natural History, are making a brief trip into Central America in search of materials for entomological groups for the Cleveland Museum. They are the guests of Mr. M. F. Bramley, of Cleveland, who is making the trip in the yacht "Peary", which was used by MacMillan and Byrd in their Arctic Expedition in 1925. The party sailed from Long Beach, California, February 1. Before going to Guatemala they will spend a few days on the uninhabited island of Socorro.

Entomological Literature

COMPILED BY FRANK HAIMBACH AND LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞*Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

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ory. [93] 1929: 267-270. **Estable, C.**—Observaciones sobre algunos insectos del Uruguay. [An. Mus. Hist. Nat. Montevideo] 3: 57-92. **Fulda, O.**—Sammelreise quer durch Mexiko. [20] 45: 2-4, cont. **McKellar, H.**—Obituary. By N. Criddle. [4] 61: 288. **Myers, J. G.**—The nesting together of birds, wasps and ants. [Pro. Ent. Soc. London] 4: 80-90. **Navas, R. P. L.**—Insectos neotropicos. [44] 32: 106-128. **Nininger, H. H.**—Brief notes on Mexican insects. [103] 3: 28. **Noble, G. K.**—What produces species? [15] 1930: 60-70. **Ruediger, E.**—Entomologie und ethik. [14] 43: 221-223, cont. **Stiles & Hassell.**—Key-catalogue of parasites reported for primates (monkeys and lemurs) with their possible public health importance. [U. S. Hyg. Lab.] Bull. 152: 409-601. **Thompson, W. R.**—On the part played by parasites in the control of insects living in protected situations. [22] 20: 457-462. **Weiss, H. B.**—The entomology of the "Menagier de Paris". [6] 37: 421-423. **Weiss & Ziegler.**—More notes on the wood engravers of North American insects. [6] 37: 439-440.

ANATOMY, PHYSIOLOGY, Etc.—Allard, H. A.—Our insect instrumentalists and their musical technique. [Smiths. Rep.] 1928: 563-591, ill. **Alpatov, W. W.**—Experimental studies on the duration of life. XIII. The influence of different feeding during the larval and imaginal stages on the duration of life of the imago of Drosphila melanogaster. [90] 64: 37-55, ill. **Berland, L.**—Les forficules sont-elles carnivores? [25] 1929: 289-290. **Boldyrev, B. T.**—Spermatophore fertilization in the migratory locust (Locust migratoria). [Rep. Appl. Ent., Leningrad] 4; 189-218, ill. **Bredig, Carter & Enderli.**—Ueber das gleichgewicht der kohlendioxyd-abspaltung aus ameisensäure und ihr potential. [Sitzungsberichte, Wien] 138: 1023-1030, ill. **Bureau, M. R.**—Sur la variation diurne des parasites atmosphériques: moyennes mensuelles, variation annuelle, influences météorologiques. [69] 189: 1293-1295, ill. **Crampton, G. C.**—The terminal abdominal structures of female insects compared throughout the orders from the standpoint of phylogeny. [6] 37: 453-496, ill. **Eltringham, H.**—On a new sense organ in certain Lepidoptera. [36] 77: 471-473, ill. **Everly, R. T.**—Preliminary experiments on the jumping reactions of Melanoplus differentialis [43] 39: 309-315, ill. **Giglio-Tos, E.**—Riflessioni di un biologo sul metabolismo della sostanza vivente. [Riv. Biol., Milano] 11: 485-519. **Jobling, B.**—A comparative study of the structure of the head and mouth parts in the Streblidae (Pupipara). [Parasit.] 21: 417-444, ill. **Lestage, J. A.**—Les larves à trachéo-branchies ventrales. [Ephemeroptera.] [33] 69:

433-440. **Locke, D.**—Die unglückskerne. Eine dramatifche geschichte vom untergang einer aufblühenden gemeinschaft bolivianifcher schirmameisen. [Kosmos] 27: 22-28, ill. **McIndoo, N. E.** — Communication among insects. [Smiths. Rep.] 1928: 541-562, ill. **Mezger, M.**—Curiosité et résistance au vol des Papillions. [Lambillionea] 1929: 139. **Myers, J. G.**—Facultative blood-sucking in phytophagous Hemiptera. [Parasit.] 21: 472-480. **Peters, H.**—Ueber den farbensinn der tagfalter. [14] 43: 237-239. **Reinöhl, F.**—Die vererbung erworbener eigenschaften. [Naturwissen. Monats., Heimat] 42: 321-335, ill. **Ripper, W.**—Beziehungen zwischen lebensweise und bau der kopfkapsel bei Lepidopterenlarven. [Verh. Zool.-Bot. Gesell. Wien] 79: 57-61. **Snodgrass, R. E.**—The thoracic mechanism of a grasshopper and its antecedents. [Smiths. Misc. Coll.] 82: 111pp., ill. **Study, E.**—Kann mimikry auf zufall beruhen? [17] 47: 1.4. **Thompson, W. R.**—A contribution to the study of morphogenesis in the muscoid diptera. [36] 77: 195-244, ill. **Umeya & Karasawa.**—On the morphology of the duplicate genitalia of the male-moth, Bombyx mori. [Jour. Chosen Nat. Hist. Soc.] 1929: 39. **Verlaine, L.**—La construction des cellules hexagonales par les guêpes et les abeilles. [33] 69: 387-417, ill. **Wigglesworth, V. B.**—A theory of tracheal respiration in insects. [31] 124: 986-987.

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era and the North American species. [19] 24: 314-321, ill. ***Moulton, D.**—Two new species of Lispothrips from Canada with notes on other species. [4] 61: 286-287. **Nichols, E. R.**—Termites of Southern California. [13] 21: 123. **Pirion, R. P. A.**—Observaciones sobre 3 Odonatos del valle de Marga-Marga. [44] 32: 95-97. ***Silvestri, F.**—Contribuzione alla conoscenza degli Japygidae (Thysanura) di Cuba. [23] 22: 263-281, ill. **Stuardo, C.**—Notas entomologicas. Algunas observaciones sobre dos Afelininos parásitos de Aleurothrixus porteri. (S) [44] 32: 154-157. **Winter, J. D.**—A preliminary account of the raspberry aphids. [Univ. Minn. Ag. Exp. Sta., Tech. Bull.] 61: 29pp., ill.

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[44] 32: 140-143, ill. **Cleare, L. D.**—Butterfly migrations in British Guiana. II. [36] 77: 251-264, ill. ***Gunder, J. D.**—New butterflies and sundry notes. [19] 24: 325-332, ill. ***Hawker-Smith, W.**—A new species of African Lycaenidae. (S). [Bull. Hill Mus.] 3: 234. **Hayward, K. J.**—Description of the larva of Sibine fusca. A limacodid from the Argentine. [21] 42: 12-13. **Hayward, K. J.**—Description of the larva and pupa of Phobetron coras. A limacodid from the Argentine. [21] 41: 180-182, ill. **Kremky, J.**—Remarques sur la morphologie et la distribution géographique des Lépidoptères du groupe de l'Apamea nictitans. [An. Mus. Zool. Polonici] 7: 95-101, ill. ***McDunnough, J.**—Some apparently new Microlepidoptera. [4] 61: 266-271, ill. **Schultze, A.**—Die ersten stände von drei kolumbianischen hochandinen Satyriden. [63] 43: 157-165, ill. **Talbot, G.**—A monograph of the Pierine genus Delias. Part IV. 168-219, ill. **Williams, C. B.**—Evidence for the migration of butterflies. [Bull. Soc. R. Ent. Egypte] 1929: 193-210.

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SPECIAL NOTICES.—Bibliographia Zoologica.—Vol. 39. Just issued containing 1734 titles of entomological papers. **Biological Abstracts.**—Vol. III. Nos. 6-8. Just issued containing abstracts of 536 entomological papers. **Insects, Ticks, Mites** and Venomous Animals of Medical and Veterinary Importance. Part 1. Medical. By W. S. Patton and A. M. Evans. 785pp., ill. This work should prove to be valuable to those interested in medical entomology. It can be secured only on application to Miss M. Brown, School of Tropical Medicine, Liverpool.

A HANDBOOK OF THE MOSQUITOES OF NORTH AMERICA, by ROBERT MATHESON, Professor of Entomology, New York State College of Agriculture, Cornell University. Published by Charles C. Thomas, Springfield, Illinois, and Baltimore, Maryland. Pages XVII + 268. Plates XXV. Figures 23. Price $5.50.

Dr. Matheson has produced a volume which will be of the greatest value to all who are interested in the mosquitoes of the northern United States. His introductory chapters on the structure and biology of mosquitoes and their relation to human welfare are particularly good. He also includes chapters on the problem of mosquito reduction and on collecting and preserving mosquitoes and their larvae.

The systematic portion of the book takes up in turn the common North American species of *Anopheles, Aëdes, Culex, Theobaldia, Psorophora, Taeniorhynchus, Uranotaenia, Orthopodomyia, Megarhinus* and *Wyeomyia,* with keys to the species by "adults", "males" and "larvae".

In his nomenclature, Matheson discards all subgeneric divisions, but follows Dyar, for the most part, as to genera and species, although he has adopted the British viewpoint to the extent of substituting *Theobaldia* for *Culicella,* and *Taeniorhynchus* for *Mansonia.* This latter change is particularly unfortunate, since *Taeniorhynchus* Lynch Arribálzaga 1891 (mosquitoes) must be considered to be a homonym of *Taeniarhynchus* Weinland 1858 (cestodes), and is therefore not available for use as a mosquito genus. It is also to be regretted that the arrangement of the genera in Matheson's book and of the species in the genera is entirely arbitrary, not corresponding to the natural relationships nor even following some alphabetical or chronological scheme.

Dr. Matheson's years of intimate acquaintance with the mosquitoes of the northeastern United States enable him to give a thoroughly satisfactory treatment of the species of this region, but the southern and western faunas are rather neglected, many of the more uncommon species being barely mentioned or entirely omitted.

The illustrations are numerous and carefully prepared. Dr. Matheson is to be especially congratulated on the admirable drawings portraying the basal portions of the male hypopygial structures of several genera in both dorsal and lateral views. The many figures of entire male hypopygia are very accurately drawn and will be useful, although I wish that they could have been printed a little larger. The figures of entire mosquito larvae, however, placed six to a page, are entirely too small for satisfactory use. To my mind, it would have been better to give larger scale figures of the head and tip of the abdomen only, as was done in Dyar's "Mosquitoes of the Americas."

There are far too many typographical errors in the book, and some of them are hard to forgive. Casual references to the genus *Megarhinus*, for example, are spelled correctly, but in the table of contents and in the section devoted particularly to this genus, it appears as *Megharinus*. There are also some regrettably careless statements in the text. Under *Anopheles pseudopunctipennis* (page 91), for example, the larva of this species is described as follows: "The larva is almost identical with that of *maculipennis*. The only distinguishing character is the long drawn out condition of the leaves of the palmate hair tufts." In the larval key on a preceding page (page 84), Matheson has already used another "distinguishing character", the unbranched outer clypeal hairs, to separate out the larva of *pseudopunctipennis*, and there are many more which could be cited. In fact, the larva of *pseudopunctipennies* is entirely dissimilar to all the other North American species of *Anopheles* in almost every character which has been used in differentiating between the larvae of the different species of this genus.

Again, in his introductory discussion of mosquito reduction, on pages 59 and 60, Matheson says: "The problem of mosquito reduction involves two distinct points of view; (1) that of the public health official who has been and still is largely concerned with the reduction of mosquito-borne diseases; (2) that of the entomologist who urges that all species of mosquitoes be included in any plan of control." Of course Dr. Matheson can not have meant this statement to be taken literally. One cannot imagine, for example, an entomologist urging that any plan of mosquito control should include the destruction of all pitcher-plants in the area, because the harmless *Wyeomyia smithii* utilizes this breeding place. But even the idea of urging that any anti-malaria or anti-yellow fever campaign should include control of the mosquito nuisance in its program seems to me to be a step backward, opposed to the modern and scientific procedure of finding out the particular species of mosquitoes which are actually carrying disease, and then restricting control measures to them, so far as is possible, thus reducing the expense of mosquito control to a point where control work will actually be undertaken.—FRANCIS M. ROOT.

Doings of Societies

THE AMERICAN ENTOMOLOGICAL SOCIETY.

The stated meetings of the American Entomological Society for 1929 were regularly held in the rooms of the Entomological Department of the Academy of Natural Sciences. The average attendance was 17. Three members were admitted during the year, bringing the total to 59 resident members.

A number of distinguished visitors participated in our meetings, and while the average attendance was not as large numerically as may be desired, all the meetings were successful and enjoyable. The meetings of the Northeastern Branch of the American Association of Economic Entomologists were held in New York on November 21. This coincidence materially reduced our average attendance, as many of our members took part in these meetings in New York.

The outlook for 1930 is very promising as already 7 applications for membership are in the Secretary's hands.

At the meeting of January 24, Mr. J. A. G. Rehn gave a talk on African and Madagascan Grouse-locusts.

At the meeting of February 28th, Mr. Wm. M. Chapman spoke on his work at the Experiment Station in Florida, Mr. Frank M. Jones talked on finding of the bag-worm, *Oiketicus abbotti,* near Accomac, Virginia, Dr. Witmer Stone gave a graphic account of a trip made by him to the Chiricahui Mountains in Arizona.

At the meeting of March 28, Dr. J. Lyonel King gave a talk on the work carried on at the Japanese Beetle Laboratories in New Jersey.

At the meeting of April 25, Mr. J. A. G. Rehn made some remarks on the distribution of certain genera of Grouse-locusts; Dr. P. P. Calvert gave a talk on the moulting of insect larvae, especially the increase in the number of moults upon reducing the food supply.

At the meeting of May 23, Mr. Frank M. Jones exhibited carton nest and specimens of the ant, *Cremastogaster atkinsoni* Wheeler, from Royal Palm State Park, Florida.

At the meeting of September 26, Mr. Frank M. Jones spoke on his collecting trip at Martha's Vineyard, Massachusetts, during the past summer, listing many rare species; Mr. Chas. H. Ballou spoke of the experiment with the sap of geranium and its effect upon the Japanese beetles; Mr. Max Kisliuk spoke on the absence of Japanese beetles at Atlantic City in the past summer; Mr. Robert J. Titherington related his experiences in collecting insects in New Hampshire during his vacation.

At the meeting of October 24, Mr. R. C. Williams, Jr. spoke on the recent visit of Mr. and Mrs. Orazio Querci. Dr. P. P. Calvert spoke on the rearing in captivity from the egg of *Sympetrum vicinum* and of *Calopteryx maculata* (both Odonata) by Mr. F. Reese Nevin; Dr. Henry Fox spoke of the ability of bringing Japanese beetles through their various stages of development more quickly in high temperatures; Mr. Max Kisliuk suggested that if Japanese beetles would become established in Florida they would be a greater menace even than here; Mr. Ballou spoke of the effect of soil under certain conditions upon the development of insects; Mr. Revney, of Washington, spoke of the moulting in larval stages of insects, more especially of *Cimex lectularia;* Mrs. Margaret Cary exhibited specimens of *Apantesis vittata* (Lepidoptera) which she reared from eggs secured from a female captured in Fairmount Park, and several other species of *Apantesis* which she collected in New Hampshire in the past season; Mr. Frank M. Jones reported the behaviour of *Papaipema* species (Lepidoptera) in the south as maturing later than in the north; Dr. Jesse M. Shaver, of Nashville, Tennessee, spoke of the development of *Chrysobothris femorata* (Coleoptera) under temperature control and of its injury caused to peach trees; Mr. Jos. S. Wade, of Washington, D. C., gave a brief outline of the scientific societies of Washington; Mr. J. A. G. Rehn made some remarks on the African species of the Blattid genus *Ectobius;* Mr. Frank Haimbach reported the capture in numbers of the European satin moth *Stilpnotia salicis* at New London, New Hampshire, in the past summer.

At the meeting of November 21, Dr. Levi Mengel, of the Public Museum and Art Gallery of Reading, gave a talk illustrated with lantern slides on his trip to Spain in the past summer.

At the meeting of December 19, Mr. Chas. A. Thomas, of State College Laboratory, Kennett Square, gave a talk, illustrated with lantern slides, on mushroom insects and wire worms (Elateridae).

FRANK HAIMBACH, *Recording Secretary.*

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted—Blues, Coppers, Hairstreaks of all States, also Euchloe genutia. Norman R. Gunn, 1951 Yosemite Road, Berkeley, Calif.

Wanted—Specimens of Psammocharidae, particularly of the subfamily Pepsinae, from North America, Central America and West Indies. Will buy or borrow material for study.—K. A. Salman, Fernald Hall, Amherst, Mass.

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Wanted—Everes comyntas and amyntula from all parts of N. Am. by purchase or exchange for local lepid. Dr. Edwin P. Meiners, 6600 Delmar Blvd., St. Louis, Mo.

Wanted for Exchange or Determination, specimens of the genus **Eucerceris** of the Hymenoptera, tribe of Cercerini. H. A. Scullen, Department of Entomology, Oregon State Agricultural College, Corvallis, Oregon.

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of desiderata for further information to

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